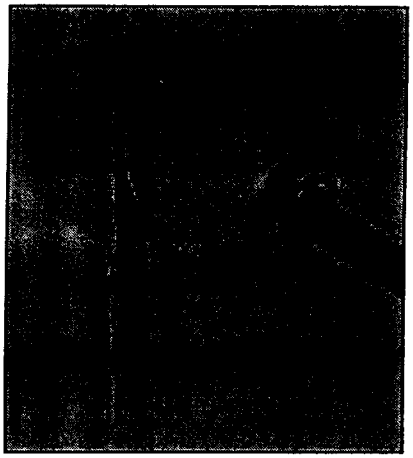
Plastic Fiber Optic Super-Bright LED — IF-E97



Description

The IF-E97 is a super-bright red LED in Industrial Fiber Optics' family of low-cost, medium-frequency, short-distance fiber optic LEDs and detectors. Each LED and detector consists of a polycarbonate (PC) housing, an internal active element such as an LED or photodetector subcomponent, and a cinch nut to hold the fiber in place. The PC housing retains the active element and the cinch nut while optimizing coupling between the active element and the jacketed 1000 µm plastic fiber.

The IF-E97 contains a red LED with an output center spectral wavelength of 660 nm. The red LED output is one of the optimal transmission windows of PMMA fiber and has the advantage of being easier to troubleshoot.

Working with this family of fiber optics is simple: No special tools or training required. Only a sharp knife or razor blade is needed to terminate the plastic fiber. When the fiber is inserted in the LED or detector housing, tighten the cinch nut. Thereafter, the fiber can be removed simply by loosening the nut.

Applications

- Household Appliances
- Motor Controller Triggering
- PC-to-Peripheral Links
- Medical Instruments
- Automotive Electronics
- Audio Systems
- Electronic Games
- Robotics Communications

Features

- No Optical Design Required
- Mates with Standard 1000 µm Core Jacketed Plastic Fiber Cable
- Internal Micro-Lens for Efficient Coupling
- Inexpensive Plastic Connector Housing
- Connector-Less Fiber Termination and Connection
- Interference-Free Transmission from Light-Tight Housing
- Excellent Linearity
- Visible Light Output

Maximum Ratings

(T_A = 25°C)

Operating and Storage Temperature Range (T_{OP}, T_{STG}) .....-40° to 85°C

Junction Temperature (T_J) .....85°C

Soldering Temperature (2mm from case bottom) (T_S) t≤ 5s .....240°C

Reverse Voltage (V_R).....5 V

Power Dissipation (P_{TOT}) T_A = 25°C.....100 mW

De-rate Above 25°C.....1.33 mW/°C

Forward Current, DC (I_F) .....40 mA

Surge Current (I_{FSM}) t≤10 µsec.....200 mA

Characteristics (T_A=25°C)

Parameter	Symbol	IF-E97	Unit
Peak Wavelength	λ_{PEAK}	660	nm
Spectral Bandwidth (50% of I_{MAX})	$\Delta\lambda$	40	nm
Output Power Coupled into Plastic Fiber (1 mm core diameter). Distance Lens to Fiber ≤0.1 mm, 10 cm polished fiber, I_F=10 mA	Φmin	>100 >-10	µW dBm
Switching Times (10% to 90% and 90% to 10%) (R_L=47Ω, I_F=10 mA)	t_r, t_f	.5	µs
Capacitance (V_F=0, F=1 MHz)	C_0	30	pF
Forward Voltage (I_F=50 mA)	V_f	1.7 max	V
Temperature Coefficient, λ_{PEAK}	TC_λ	.2	nm/K

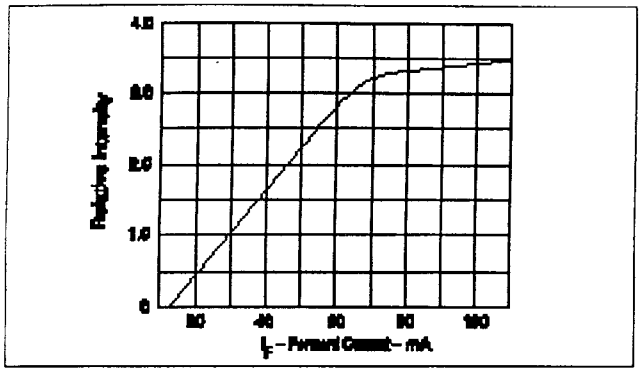


FIGURE 1. Normalized power launched versus forward current.

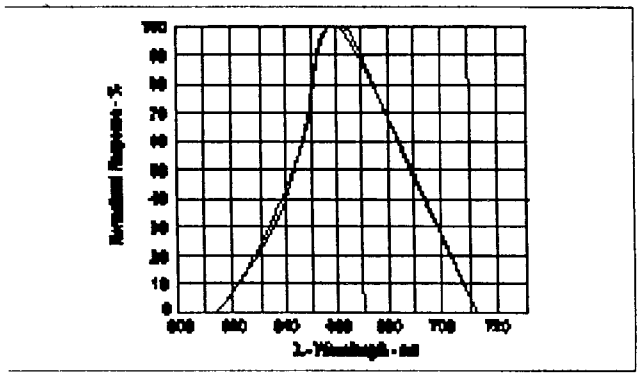


FIGURE 2. Typical spectral output versus wavelength.

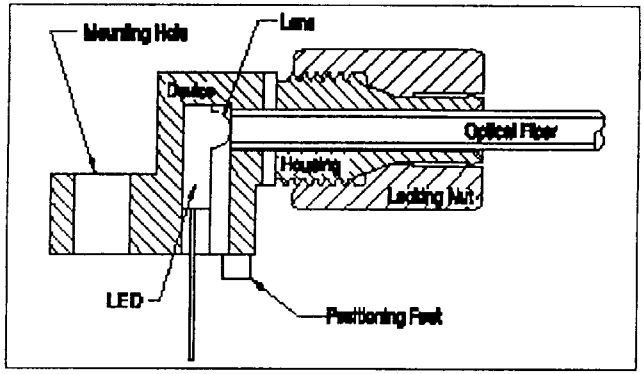
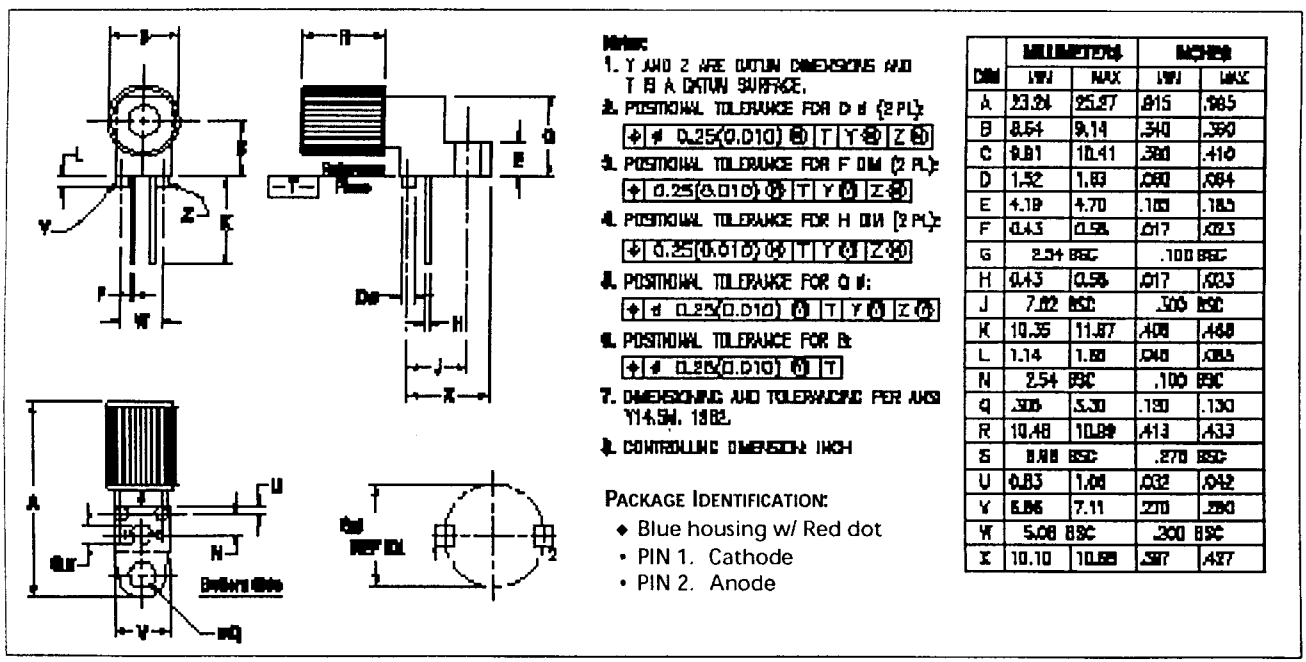


FIGURE 3. Cross-section of fiber optic device.

FIBER TERMINATION INSTRUCTIONS

1. Cut off the ends of the optical fiber with a single-edge razor blade or sharp knife. Try to obtain a precise 90-degree angle (square).
2. Insert the fiber through the locking nut and into the connector until the core tip seats against the internal micro-lens.
3. Screw the connector locking nut down to a snug fit, locking the fiber in place.



Notes:
1. Y AND Z ARE DATUM DIMENSIONS AND T IS A DATUM SURFACE.
2. POSITIONAL TOLERANCE FOR D ø (2 PL):
⌖ ø 0.25(0.010) Ⓜ | T | Y Ⓜ | Z Ⓜ
3. POSITIONAL TOLERANCE FOR F DIM (2 PL):
⌖ 0.25(0.010) Ⓜ | T | Y Ⓜ | Z Ⓜ
4. POSITIONAL TOLERANCE FOR H DIM (2 PL):
⌖ 0.25(0.010) Ⓜ | T | Y Ⓜ | Z Ⓜ
5. POSITIONAL TOLERANCE FOR Q ø:
⌖ ø 0.25(0.010) Ⓜ | T | Y Ⓜ | Z Ⓜ
6. POSITIONAL TOLERANCE FOR R:
⌖ ø 0.25(0.010) Ⓜ | T
7. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
8. CONTROLLING DIMENSION: INCH

PACKAGE IDENTIFICATION:
- Blue housing w/ Red dot
- PIN 1. Cathode
- PIN 2. Anode

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	23.24	25.27	.915	.985
B	8.64	9.14	.340	.360
C	9.81	10.41	.386	.410
D	1.52	1.83	.060	.084
E	4.19	4.70	.165	.185
F	0.43	0.56	.017	.023
G	2.54 BSC		.100 BSC	
H	0.43	0.56	.017	.023
J	7.62 BSC		.300 BSC	
K	10.35	11.87	.408	.468
L	1.14	1.80	.045	.065
N	2.54 BSC		.100 BSC	
Q	.305	5.30	.120	.130
R	10.48	10.89	.413	.433
S	6.88 BSC		.270 BSC	
U	0.83	1.06	.032	.042
V	5.86	7.11	.230	.280
W	5.08 BSC		.200 BSC	
X	10.10	10.69	.397	.427

FIGURE 4. Case outline.